

Tufts Climate Initiative Taking Action for Climate Change

Sarah Hammond Creighton, Project Manager

Tufts Climate Initiative
Miller Hall, Tufts University
Medford MA 02155
617-627-5517
fax: 617-627-6645
sarah.creighton@tufts.edu
www.tufts.edu/tci



Commitment

“I am pleased ... commit Tufts University to meet or beat the Kyoto goal of a seven percent reduction below 1990 in our carbon dioxide emissions by the year 2012.”

Tufts University Former President, John DiBiaggio

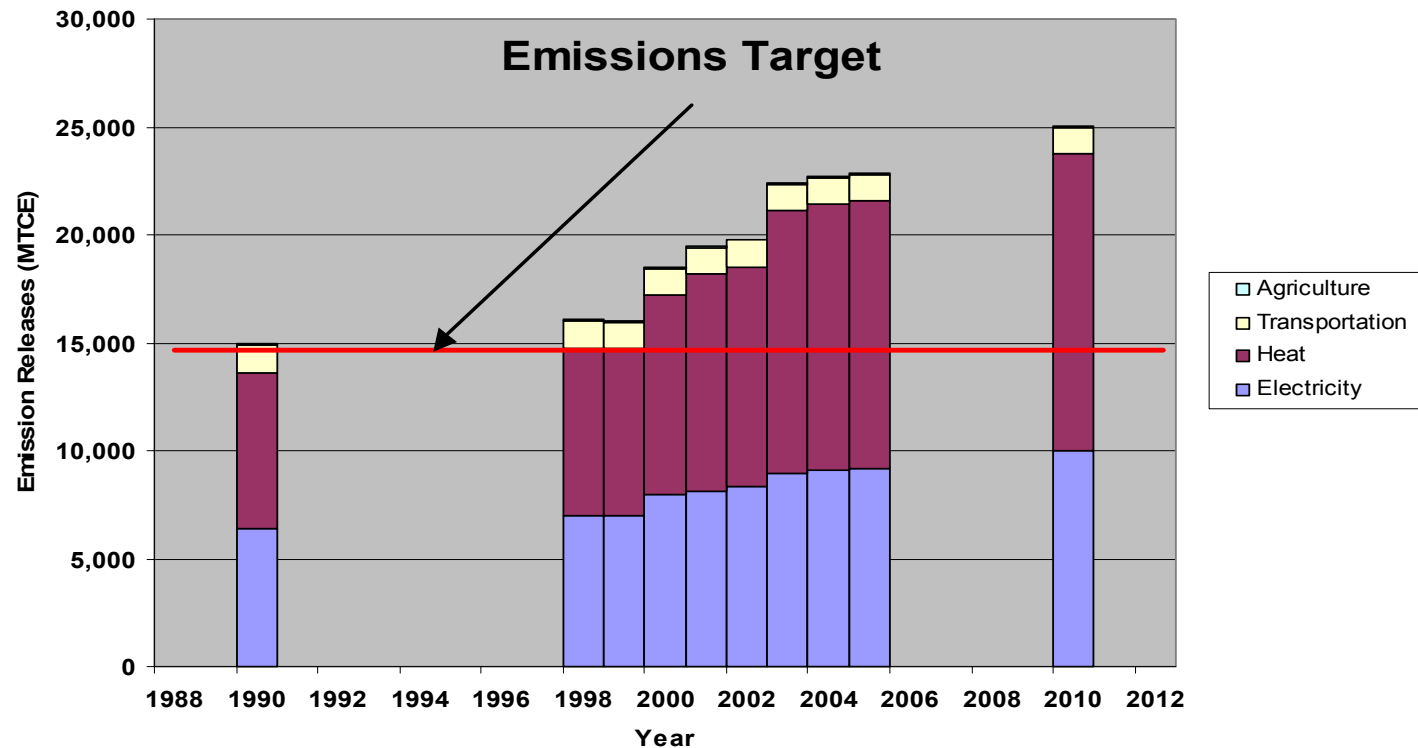
April 1999

President Lawrence Bacow

March 2002



Tufts University Carbon Inventory



**7% below 1990 CO₂ levels translates
into 30% reduction**

What does climate change action look like?

- Efficient existing buildings
- Efficient new buildings
- Efficient equipment (computers, washing machines, refrigerators, vehicles)
- Green (clean) power
 - Generated on site
 - Purchased from a utility
- Co-generation (heat and electricity)
- Personal actions
- Policies

Can we reach the target?

YES!

Many Scenarios.... For example:

10% decrease electrical use through efficiency

5% green power

10% fuel switch from oil to gas

Level use going forward



Where to start?

- Where you can achieve results
- Pilot basis
- Where pilot project have succeeded
- Where other investment is underway or planned
- Where you have influence

Action Areas

- Reducing Greenhouse Gas Emissions
 - High performance in new buildings
 - Existing buildings
 - Alternative fuels and fuel switch
 - Personal Action
 - University policies and planning
- Research
- Education and outreach



TCI is a Partnership

- Department of Facilities
- Energy Manager
- Dept. of Construction
- Dining, Purchasing
- Residential Life
- Faculty
- Students





Wildlife Clinic
Tufts School of Veterinary Medicine

Wildlife Clinic Results

- Reduced area with 15 air changes/hour
- Heat exchange enthalpy wheel
- Digital controls
- Front loading washing machine (15 loads/day)
- Simplified roof
- Hardy Plank siding
- Building Commissioning

Energy measures = 5 year payback

Solar Residence Hall

- Currently in design
- 30 kW photovoltaic system on roof
- 2 kW photovoltaic system in curtain wall
- LEED Silver - goal
- Energy modeling and efficiency



Solar Residence Hall



Rooftop: horizontal PV array will generate 25,000 kWh annually.



Crystalline PV modules in curtain wall will generate 5,000 kWh/year on a demonstration basis.

Solar Residence Hall: How we are doing "it".

- In early - Request for Designers
- Working within the system
- Picking our targets
- Off-the-shelf not top-of-the-shelf
- Adding value to the process
- Funding

Existing Buildings

- Critical to reducing net carbon emissions
- Focus on:
 - Heating
 - Cooling
 - Electricity use (including plug loads)
 - Building envelope
 - Building use and policy

Schmalz House Renovation

- Planned for renovation
- Grad student study
- Comprehensive look at building systems
- Phased implementation



Schmalz House: Treating the building as a system



Lighting sensors
and controls

Front-loading
washing machine



Heating: Sizing and Controls



Solar hot water and water conservation cut water heating fuel use by 50%

How we did it

- Piggy-backed onto planned retrofits (deferred maintenance)
- Linked energy with planned renovation
- Overcame solar industry's inexperience with big institutions

Lighting

- First university Green Lights partner (1990)
- Campus-wide installation of efficient lamps and ballasts.
- 1500 CF lamps for desk lights.
- Occupancy sensors (\$600,000)





In the chapel CF lamps in chandeliers cut electricity cost in half.

Alternative Fuels





Alternative Fuels



New Technologies:



Vending Misers

www.bayviewtech.com

Steps to Saving Energy with Vending Misers:

- Mount to wall
- Plug in

THE VENDING MISER STORY...

- Student intern found out about it
- Ordered one to try out, showed almost 50% savings, payback 1-2 years
- Talked with Coke and facilities and oked
- Ordered about 100
- Temporarily installed some of them (union issues!)
- Contractor installed them permanently
- Student left
- Coke company had to move machines to gain access
- New student installed them temporarily
- Contractor had to come back
- Machines had to be moved back into place
- We went back to check cables and put up signs.
- Complaints started to come in: circuits blown out
- Complaints continue, Facilities gets made, refuse to respond to service calls about misers
- Frantically search for solutions:
- Repeater!!!
- Meet with Dinging, Meet with Coke,
- Install nasty signs

This machine is equipped with a

VENDING MISER

The lights shut off when no one is standing by the machine. The fridge powers down when the sodas are cold.

**This saves about
50% of the energy!**



Learn more about how
you can stop climate change!
Visit us at: www.tufts.edu/tci
or call us at: 617-627-5517

Planning and Policy

The Energy Affairs Council

- Representatives of all 8 schools
- Develop energy recommendations: reliability, cost, and environment
- Develop temperature standards and policies
- \$1 million annual fund for energy projects

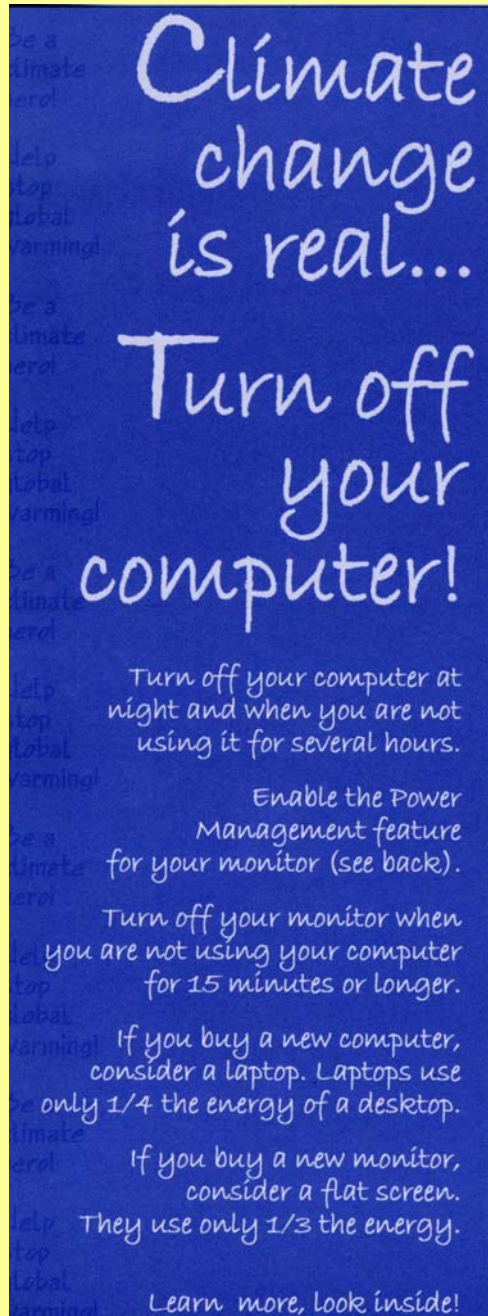




EAC: Debating policies

Climate Change links with emergency planning





Personal Action Initiatives


Changing Behavior

- 15,000 brochures
- Letter from the VP
- Facts and figures

Personal Action Initiatives

Light bulb exchange

- Over 1500 light bulbs
- No "returns"




Tufts Climate Initiative

Tufts Light Bulb Exchange Program

Tufts students, staff, and faculty can bring their incandescent bulbs to the Tufts Climate Initiative office in Miller Hall (Medford campus) and get free Compact Fluorescent Bulbs to replace them.

If you have questions,
call TCI at: 617-627-5517



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Working with people

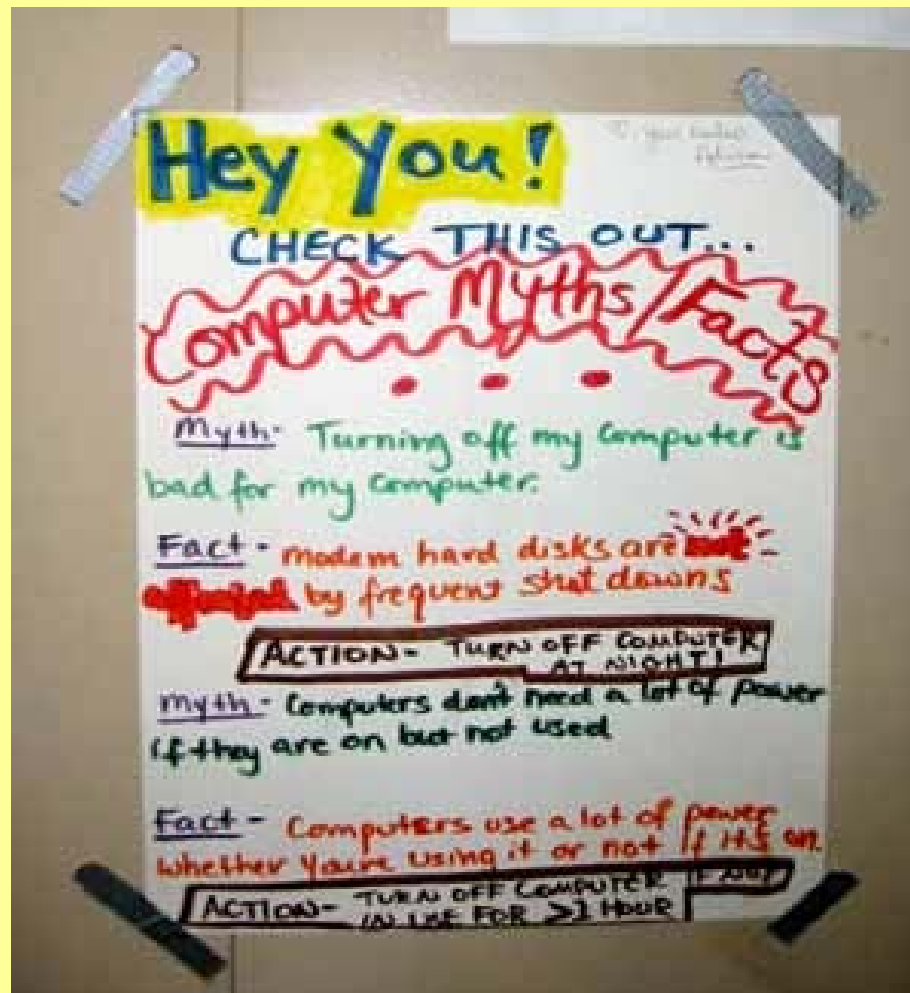
Students: Eco-Reps and student projects

Staff and Faculty: Building Curators

Administrators: Energy Affairs Council



Eco-Reps educate others



250 students in projects

Civil and Environmental Engineering

Mechanical Engineering

Chemical Engineering

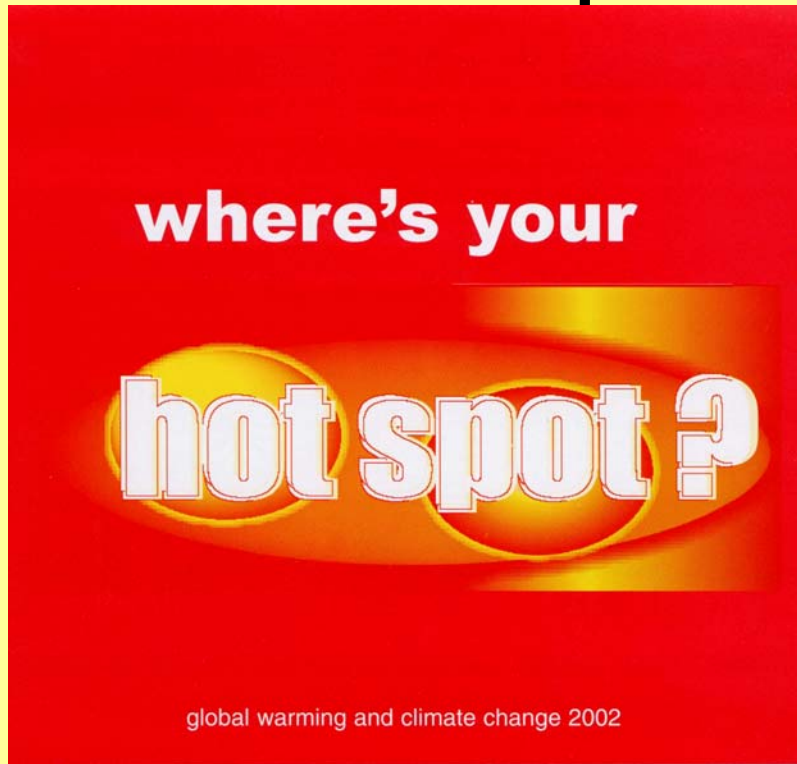
Urban and Environmental Planning and Policy

Political Science

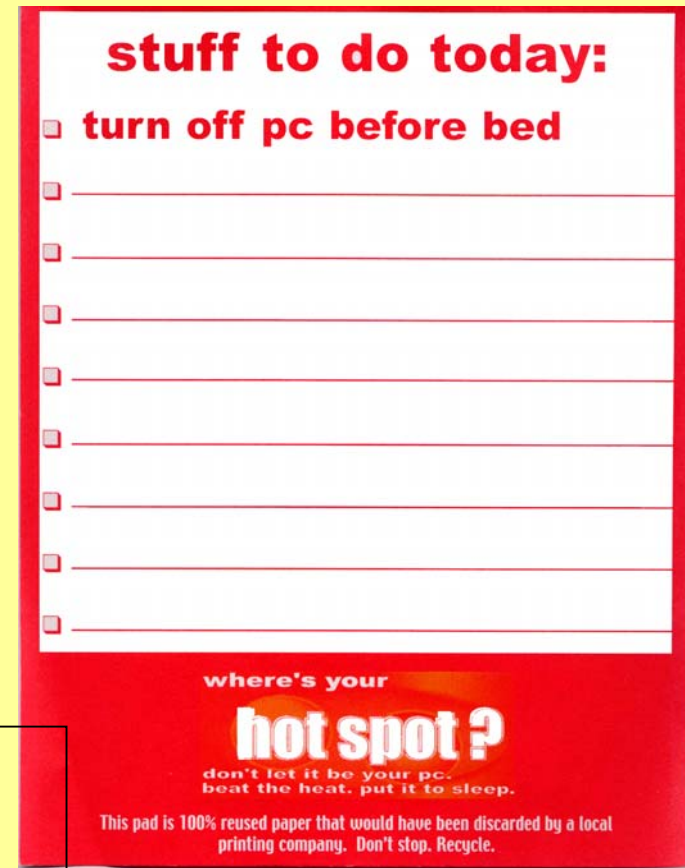
Economics



Graduate student developed "Hot Spots" Campaign

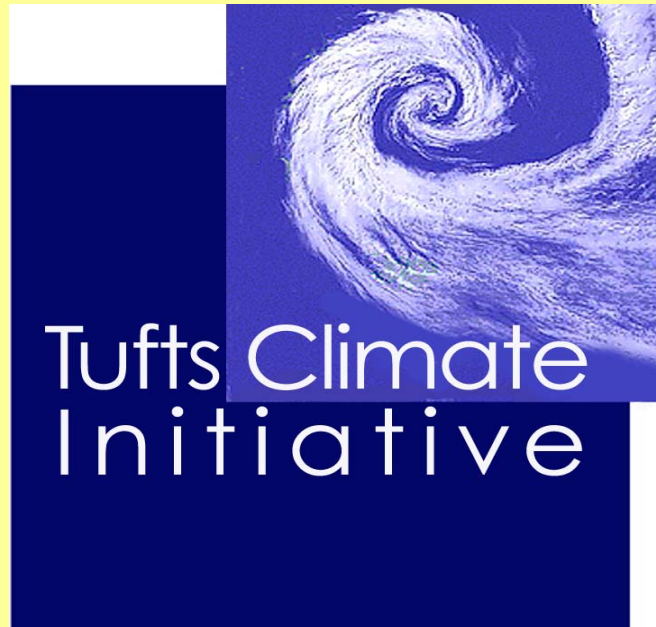


"Don't let it be your pc. Beat the heat. Put it to sleep."



What does it take?

- Commitment
- Investment
- Time
- Understanding of technical issues
- Willingness to take risks
- Asking the right questions
- Advocacy



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